

S06-198
Amendment dated 10/19/2009

10/599,084

02940350aa
Reply to office action mailed 05/19/2009

The following is a complete listing of all claims in the application, with an indication of the status of each:

Listing of claims:

- 1 1. (currently amended) A method for reducing motion artifacts and patient
2 dose in radiological imaging using four dimensional computed tomography
3 (4D CT), comprising the steps of:
4 identifying a pattern in an average cycle artifacts in ~~4D~~ CT images of
5 an anatomy being imaged, said ~~pattern~~ image artifacts being responsive to
6 ~~irregularities in a reproducible~~ periodic motion of said anatomy;
7 establishing spatial and temporal tolerances around said pattern, said
8 tolerances being an envelope around said pattern balancing an acquisition
9 time against a quality of an acquired 4D CT image;
10 measuring ~~said a~~ periodic motion of said anatomy so as to detect when
11 said periodic motion is outside said tolerances ~~irregularities~~;
12 controlling a 4D CT scan of said anatomy so as to pause the scan
13 during periods having said detected out of tolerance condition ~~irregularities~~.
- 1 2. (original) A method as in claim 1, wherein said anatomy is a lung and said
2 measuring step uses a respiratory signal.
- 1 3. (canceled).
- 1 4. (currently amended) The method of claim ~~3~~ 2, wherein said controlling
2 step further includes the steps of:
3 acquiring a respiratory signal during said 4D CT scan;

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4 applying said envelope to said respiratory signal; and
5 adapting said 4D CT scan to said respiratory signal by excluding from
6 said 4D CT scan data acquired when said respiratory signal is not within said
7 envelope.

1 5. (original) The method of claim 4, wherein data acquired during irregular
2 respiratory cycles is excluded by pausing said 4D CT scan data acquisition
3 when said respiratory signal is not within said envelope.

1 6. (original) A system for reducing motion artifacts and patient dose in
2 radiological imaging using four dimensional computed tomography (4D CT),
3 comprising:

4 means for identifying a pattern in an average cycle artifacts in 4D CT
5 images of an anatomy being imaged, said pattern image artifacts being
6 responsive to irregularities in a reproducible periodic motion of said anatomy;
7 means for establishing spatial and temporal tolerances around said
8 pattern, said tolerances being an envelope around said pattern balancing an
9 acquisition time against a quality of an acquired 4D CT image;

10 means for measuring said a periodic motion of said anatomy so as to
11 detect when said periodic motion is outside said tolerances irregularities;

12 means for controlling a 4D CT scan of said anatomy so as to pause the
13 scan during periods having said detected out of tolerance condition
14 irregularities.

1 7. (original) A system as in claim 6, wherein said anatomy is a lung and said
2 measuring means uses a respiratory signal.

1 8. (canceled).

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1 9. (currently amended) The system of claim ~~8~~ 7, wherein said controlling
2 step further comprises:
3 means for acquiring a respiratory signal during said 4D CT scan;
4 means for applying said envelope to said respiratory signal; and
5 means for adapting said 4D CT scan to said respiratory signal by
6 excluding from said 4D CT scan data acquired when said respiratory signal is
7 not within said envelope.

1 10. (currently amended) The system of claim 9, wherein said adapting means
2 provides that data acquired during irregular respiratory cycles is excluded by
3 pausing said 4D CT scan data acquisition when said respiratory signal is not
4 within said envelope.

1 11. (original) A method for reducing motion artifacts in radiological imaging
2 using four dimensional computed tomography (4D CT), comprising the steps
3 of:
4 identifying a pattern in an average cycle artifacts in 4D CT images of
5 an anatomy being imaged, said pattern image artifacts being responsive to
6 irregularities in a reproducible periodic motion of said anatomy;
7 establishing spatial and temporal tolerances around said pattern, said
8 tolerances being an envelope around said pattern balancing an acquisition
9 time against a quality of an acquired 4D CT image;
10 measuring said a periodic motion of said anatomy so as to detect when
11 said periodic motion is outside said tolerances ~~irregularities~~;
12 controlling post-processing of a 4D CT scan of said anatomy so as to
13 omit data acquired during periods having said detected out of tolerance
14 condition irregularities.

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1 12. (original) A method as in claim 11, wherein said anatomy is a lung and
2 said measuring step uses a respiratory signal.

1 13. (canceled).

1 14. (currently amended) The method of claim ~~13~~ 12, wherein said controlling
2 step further includes the steps of:

3 acquiring a respiratory signal during said 4D CT scan;
4 applying said envelope to said respiratory signal; and
5 adapting said 4D CT scan to said respiratory signal by excluding
6 during said post-processing of said 4D CT scan data acquired when said
7 respiratory signal is not within said envelope.

1 15. (original) The method of claim 14, wherein data acquired during
2 irregular respiratory cycles is excluded by omitting data acquired during said
3 4D CT scan when said respiratory signal was not within said envelope.